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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 09/391,059 | 09/07/1999 | VASUDEVAN PARTHASARATHY | RCA88495 | 8006 |

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EXAMINER

CHANG, EDITH M

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2634

DATE MAILED: 12/12/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

TS

Office Action Summary

Application No.

09/391,059

Applicant(s)

PARTHASARATHY ET AL.

Examiner

Edith M Chang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-16, 18 and 19 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-16, 18-19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Response to Arguments

1. The followings are the responses to the arguments:

Argument:

Feed-forward processing said re-encoded symbol data to produce difference data representative of a difference between successive symbols of said re-encoded symbol data.

Response:

Regarding claims 1, 5, 13 & 18, Hu discloses the feed-forward processing to process the re-encoded data to produce difference data representative of a difference between successive symbols. Where the 960 of FIGURE 11. does the processing: comparing, computing distances with subtraction, and absolute value and comparison operations (column 7 lines 20-25), it takes a first re-encoded data from input 965 and a second input from output 955 which supplies another re-encoded data that one unit delayed from the first one (965-970-955 FIGURE 11 of Hu). The Hu's disclosure implies to the current specification: FIG.11 input 960, wherein the first re-encoded data is FROM UNIT 50 Sn (as the first input from input 965 of Hu) to 960; the second input is the 950 Sn-1 (as the second input from output 955 of Hu, 965-970-955) to 960 of the specification. These two inputs to the processing are successive. After the processing which is comparing that is finding the difference, subtracting, to produce difference data representative of a difference between the successive symbols; it derives decoded symbol data (X1 & X2 the decoded bits) using the delayed data and the difference data as claimed.

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2. The final rejection is withdrawn, and the persecution is reopened. The claims are now rejected under 35 U.S.C. 102(e).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-16, 18-19 are rejected under 35 U.S.C. 102(e) as being anticipated by Hu et al. (US Patent 5914988).

Regarding **claims 1 & 5**, Hu et al. discloses all subject matter claimed: a decoder and its method (FIGURE 1), it comprises a delay element (70 FIGURE 1) for delaying received encoded symbol data (DATA 1 FIGURE 1, column 3 lines 30-35) to produce delayed data; a re-encoder (50 FIGURE 1) for re-encoding decoded symbol representative data (output 40 FIGURE 1) to produce re-encoded symbol data; and a processor (60 FIGURE 1, FIGURE 11) for feed-forward processing the re-encoded symbol data (output 50 FIGURE 1) to produce difference data representative (output 960 FIGURE 11) of a difference between successive symbols of the re-encoded symbol data (the successive symbols are: S_{n-1} from 950, S_n from RE-ENCODED DATA of FIGURE 11; the difference is provided by the 960 as stated in column 13 lines 57-65, wherein the 960 does the comparing. Also Hu et al. suggests to compute the distance of the encoded input

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symbol by look-up tables or with subtraction, absolute value and comparison operations in column 7 lines 20-25); and deriving decoded symbol data (output 977 FIGURE 11) using the delayed data (INPUT DATA FROM 70 of 950 FIGURE 11) and the difference data (two inputs of 960: one from UNIT 70, one from RE-ENCODED DATA FIGURE 11).

Regarding **claims 2 & 6**, Hu et al. discloses the feed-forward processing is exclusive of feed-back processing where the delayed data (70-60 FIGURE 1) used in demapper.

Regarding **claims 3 & 7**, Hu et al. discloses the feed-forward processing prevents error induced by feed-back processing (FIGURE 11) where the demapper uses the re-encoded data and delayed received data (from unite 70).

Regarding **claims 4 & 10**, Hu et al. discloses that the decision processor and its steps of comparing candidate values between the delayed data (input from unit 70 of 950 FIGURE 11) and the difference data (re-enocded data and input of 950 from 955 to LOO-UP TABLE 960 FIGURE 11) to determine minimum distance values (column 13 line 57-column 14 line 28), and resolving equality between determined minimum distance values in response to a prior delay and fed back comparison representative output (975-970-950 FIGURE 11, column 14 lines 11-28).

Regarding **claim 8**, Hu et al. discloses a decision processor (960 FIGURE 11) for deriving the decoded symbol data by computing an absolute distance using the difference data and the corresponding delayed received encoded symbol of the delayed data (output of 955 & RE-ENOCODED DATA, input from unit 70 FIGURE 11, column 13 line 57-column 14 line 10).

Regarding **claim 13**, Hu et al. disclose all subject matter claimed: a decoder (FIGURE 1) comprising: a delay element (70 FIGURE 1) for delaying received encoded symbol data; a re-enocder (50 FIGURE 1) for re-enocding decoded symbol; and a processor (60 FIGURE 1)

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including, a feed-forward processor (950-955-965 FIGURE 11) for processing the re-encoded symbol data exclusively of feed-back processing (where the delayed data, input from unit 70 FIGURE 11 is used) in order to produce difference data representative of a difference between successive symbols of the re-encoded symbol data (the successive symbols are: S_{n-1} from 950, S_n from RE-ENCODED DATA of FIGURE 11; the difference is provided by the 960 as stated in column 13 lines 57-65, wherein the 960 does the comparing. Also Hu et al. suggests to compute the distance of the encoded input symbol by look-up tables or with subtraction, absolute value and comparison operations in column 7 lines 20-25); a decision processor (960 FIGURE 11) for deriving the decoded symbol data by computing an absolute distance using the difference data and the delayed data (output of 955 & re-encoded, input from unit 70 FIGURE 11, column 13 line 57-column 14 line 10).

Regarding **claims 9 & 14**, Hu et al. discloses a decision processor (960 FIGURE 11) for deriving the decoded symbol data by computing an absolute distance using the difference data and the delayed data (output of 955 & re-encoded, input from unit 70 FIGURE 11, column 13 line 57-column 14 line 10); a comparator (960 FIGURE 11 does the comparison) for comparing the absolute distance values to determine a minimum symbol difference value in column 7 lines 20-25 and column 13 lines 64-67, wherein the computing the distance to determine a minimum symbol difference value is done by look-up tables or with subtraction, absolute value and comparison operations that the comparison is well known done by the comparator.

Regarding **claim 11**, Hu et al. discloses the prior delayed fed back comparison representative output (975-970 FIGURE 11) is only used in the case of equality between candidate minimum distance values (985-970 FIGURE 11, column 14 lines 11-15).

Regarding **claim 12**, Hu et al. discloses the processor derives decoded symbol data in a partial response system (10 FIGURE 1, column 3 lines 9-20).

Regarding **claim 15**, further Hu et al. discloses a comparator (960 FIGURE 11) for comparing candidate values between the delayed data (input from unit 70 FIGURE 11) and the difference data (input from re-encoded data & output 950) to determine minimum distance and resolving equality between determined minimum values (950-960 FIGURE 11) in response to a prior delayed and fed back output (output 970 to adder 950, column 14 lines 11-28).

Regarding **claim 16**, Hu et al. discloses a different configuration in resolving equality between candidate distances (975-980-970-950, 985-970 FIGURE 11) than is used for deriving the difference data (965-970-950 FIGURE 11).

Regarding **claim 18**, Hu et al. disclose all subject matter claimed: a trellis decoding apparatus (FIGURE 1) comprising: a delay element for delaying received encoded symbol data to produce delayed data (70 FIGURE 1); a re-encoder re-encoding decoded symbol representative data (50 FIGURE 1); a processor (60 FIGURE 1) processing the re-encoded data; and deriving decoded symbol data using the delayed data (column 4 lines 24-34), for processing the re-encoded data (950-955 FIGURE 11); a decision processor (960 FIGURE 11) for deriving the decoded symbol data using the delayed data and the difference data (950-955-977 FIGURE 11, column 13 line 57-column 14 line 10).

Regarding **claim 19**, Hu et al. discloses the processor deriving decoded symbol data using past subset outputs (977-970-955-950-960 FIGURE 11).

Conclusion

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5. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edith M Chang whose telephone number is 703-305-3416. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-4800.

Edith Chang
December 4, 2003


CHIEH M. FAN
PRIMARY EXAMINER